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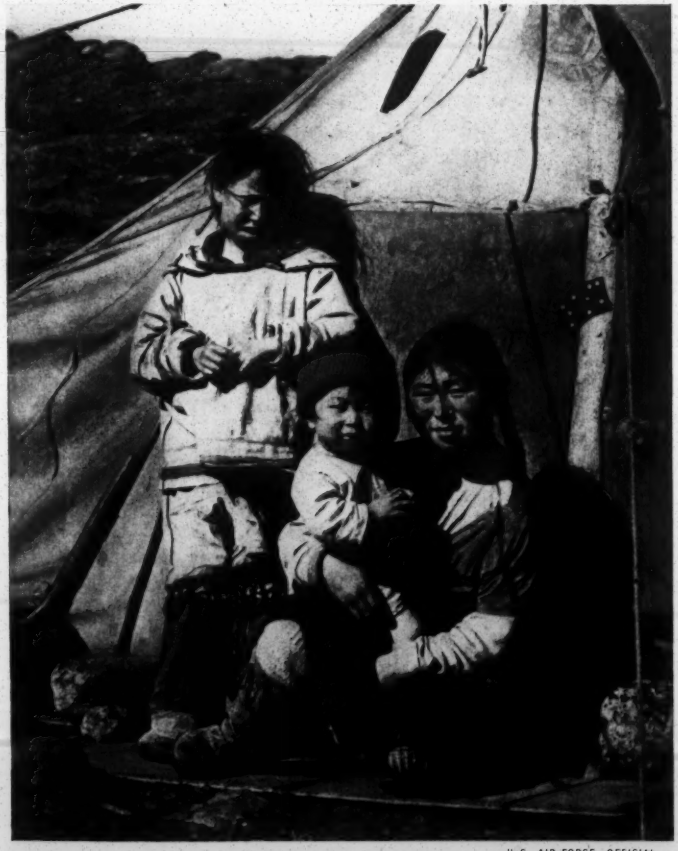

U.S. AIR FORCE, OFFICIAL

AT ITS BAFFIN ISLAND TENTSTEP, AN ESKIMO FAMILY SITS ON TOP OF THE WORLD (Bulletin No. 3)

Bulletin No. 1, October 17, 1949

Calcutta Claims First Place in Population

DOES India's steaming, teeming port city of Calcutta, together with its suburbs on both sides of the Hooghly River, comprise the world's most populous metropolitan area?

The last official count, made in 1941, showed that greater Calcutta had a total of not quite 2,500,000 inhabitants. Compared with official figures for other large cities at that time, India's industrial titan failed to rank among the ten largest cities in the world.

Was Wartime Resort and Arsenal

A recent dispatch, however, claims that 12,000,000 people are today quartered in the greater-Calcutta region. This is a larger number than is generally claimed even for London or New York. The estimate of Calcutta's population brings up an interesting question—What has been happening, since India became independent, at this great crossroads of trade between East and West?

During World War II, Calcutta's position behind the Burma front brought a steady influx of workers. Railway shops, metal-working plants, and jute mills poured forth war materials. Military men of many nations were stationed there. Soldiers on leave boomed hotel and amusement trade. American air men from China came to Calcutta for relaxation.

When India and Pakistan became independent nations in August, 1947, the division cut the province of Bengal in two. Hindus and Parsees, unhappy in East Bengal and other parts of Moslem Pakistan, began a large-scale migration to West Bengal Province in the new Dominion of India.

Because Calcutta in West Bengal offered prospects of employment, food, and shelter, refugees flocked in great hordes to the already crowded city. At the peak of the migration, in September, 1948, 15,000 people a week sometimes poured into the Hindu territory from Moslem areas.

Shade Tree Marked the City's Site

The Hooghly is the westernmost mouth of the Ganges River. Calcutta lies on its east bank 90 miles from the sea. Wharves on both river banks mark the inland limit of ocean-going ships in the region.

An enormous shade tree under which European merchants traded with the natives 250 years ago determined the site of the city, which is not old as Asian cities go. In spite of overcrowding, Calcutta is reasonably healthy today. During its early history repeated epidemics were considered inevitable products of the summer's combination of 100-degree temperature and 100-per-cent humidity. Modern sanitation and health measures have greatly improved conditions.

Calcutta was the capital of India from 1857, when Victoria was proclaimed empress, until New Delhi was built in the reign of King George V. Before partition, half the rich trade of India flowed through this one port.

Merchants in shining limousines, hulking motor trucks, creaking buf-

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MARTIN CHAMBI J

WHEN SAN CRISTÓBAL'S BELL SOUNDS, ITS CLANGOROUS PEALS CARRY ACROSS CUZCO'S PLAZA

The sexton of this church in Peru's capital has an easier job than some. He does not swing the entire bell, but simply pulls the clapper sideways with the attached line. The building beyond the square was the Church of the Company of Jesus, now part of the University of Cuzco. Just to the left of the picture stands the 17th-century cathedral—all three buildings giving the South American city its fair share of bells (Bulletin No. 4).

Quezon City, Ft. McKinley in Manila News

CHANGES are coming thick and fast in the suburbs of Manila, hub of the Philippine Republic. Quezon City, 10 miles northeast, has been preparing feverishly for its formal debut as capital of the islands. Fort William McKinley, six miles southeast of Manila, recently lowered the Stars and Stripes and one of the Army's most historic posts was turned over to the fledgling Philippine Government.

Three bells, made in France and flown from Brussels to Manila, will ring when Quezon City formally assumes the role of capital. The suburb's development as the islands' seat of government resulted from the dream of the late Manuel Quezon for an elaborate government center in the Luzon hills outside crowded Manila. City planners from the United States advised against the idea in the 1930's. They recommended using the fine government buildings in Manila as a nucleus for expansion.

Environment More Pleasant

President Quezon, however, pushed construction of the suburb. Plans were drawn for a neat metropolis to spread over more than twice Manila's area. Communities of small houses for workers' families were built, a system of streets was near completion, and foundations for some public buildings had been laid when World War II halted work. An architectural competition had produced plans for relocating the state-supported University of the Philippines in the suburb.

The higher ground assures cooler temperatures than those of lowland Manila. Vistas of green hills ribboned with streams of swift-running water make the surroundings pleasant. To stimulate the growth of his city, Quezon planned an international exposition there in 1941.

The exposition was never held. The war brought such great destruction to government buildings in Manila as to make necessary the building of a new government center from the ground up. Quezon City won out over both Manila and Baguio, former summer capital in the mountains of northern Luzon.

Across the metropolitan area at Fort William McKinley a half-century of United States military tradition ended when the American flag came down. For many years the fort was the archipelago's largest military reservation. At various times it was commanded by some of the Army's most distinguished officers, including the late General John J. Pershing. Many of the Philippine Scouts of World War II were trained there.

Pasig River Flows Through Fort

Fort McKinley was constructed in 1902 following the Spanish-American War. It sprawls over more than 8,000 acres of land. Its numerous installations and facilities have made it almost a city in itself. Flowing past the fort, through Manila and into wide, shallow Manila Bay, is the yellow Pasig River, the most important stream for commerce in the islands. Canoes throng its shores. At its mouth small steamers toot for room to turn around.

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falo carts, rickshas, and pushcarts today move together in traffic directed by efficient policemen in spotless white. Only the cows, sacred to the Hindu, amble at will on the crowded streets, left by the police to their own devices. They help themselves from vendors' vegetable carts or lie on the pavement beside fine modern office buildings.

Beggars and peddlers are everywhere. On the Chowringhee, main shopping thoroughfare, a section of tent bazaars has sprung up. One of the largest is a cloth bazaar where some 200 merchants show textile wares.

On the river bank the Maidan, the city's large park, contains historic Fort William, the handsome Victoria Memorial (illustration, below), the racecourse, and the polo ground. The city airport is being enlarged. Conversion of the rail lines from steam to electricity and building of a subway system have been proposed to ease the traffic problem.

Across the Hooghly, Howrah sprawls without plan. This industrial district shares in Calcutta's remarkable postwar growth. Some city planners contend that Howrah occupies the most advantageous side of the river, and will gradually become the heart of the metropolis.

NOTE: Calcutta may be located on the National Geographic Society's map of India and Burma. Write the Society's headquarters, Washington 6, D. C. for map price list.

See also, "Delhi, Capital of a New Dominion," in the *National Geographic Magazine*, November, 1947*; "India—Yesterday, Today, and Tomorrow," October, 1943*; and in the GEOGRAPHIC SCHOOL BULLETINS, March 1, 1948, "Division of Bengal Upsets No. 1 Industry." *(Issues marked with an asterisk are included on a special list of Magazines available to teachers in packets of ten for $1.00.)*

MAYNARD OWEN WILLIAMS

"VICTORY" SURVEYS A NEW "WORLD'S LARGEST CITY" FROM VICTORIA MEMORIAL'S HIGHEST DOME

Mirrored in pools that flank the entrance, the gleaming domes of the Victoria Memorial at Calcutta resemble those of the Taj Mahal at Agra. Marble for this imposing museum of India's history was quarried in the princely state of Jodhpur. The foundation stone was laid in 1906 by King George V, then Prince of Wales, at the time when Calcutta was still seat of government of all India. The memorial therefore represents the tribute of the entire Indian Empire. As Calcutta is primarily a commercial city with few historic monuments, the Victoria Memorial is an outstanding landmark.

Geographic Maps the "Top of the World"

"TODAY East and West are largely developed. The modern pioneer seeks his wilderness to the north and south. The frigid northlands are yielding their secrets to man." With these words the National Geographic Society is distributing to its 1,850,000 member-families a "Top of the World" map as a supplement to the October issue of the National Geographic Magazine.

Drawn on a scale of 221 miles to the inch, this newest of the Society's continuing series of ten-color maps is a sheet 28½ by 29½ inches. Charting one-sixth of the earth's surface with the North Pole as the center, it covers by far the greater part of the world's industry, commerce, and military power.

Prince Charles Island New

Dominant on the chart area chosen are Canada (illustration, next page), the Soviet Union, northern Europe, and northern United States. Russian and Polish boundaries are shown according to treaties and claims as of August 1, 1949. Among the outermost of 5,057 place names that appear are Washington, D. C., Los Angeles, London, Paris, Belgrade, Istanbul, Tabriz, and Tokyo. Farthest corners of the map lie in 25 degrees north latitude—65 degrees from the North Pole.

The tremendous amount of mapping in the far north since World War II is reflected in new detail on shore lines and shapes. Spectacular large newly charted islands shown in Canada's Foxe Basin west of Baffin Island (illustration, cover), for example, include one named Prince Charles after Great Britain's infant prince, son of Princess Elizabeth.

Flights over the North Pole have become commonplace, the Society notes. In less than a year and a half, one Arctic reconnaissance squadron of the United States Air Force alone flew over the North Pole 100 times. It studied the complicated northern magnetic area. The new map shows the north magnetic pole, center of this area, on Prince of Wales Island.

Shown also are regions of vast natural resources, including such important discoveries as the Burnt Creek iron-ore area on the Labrador-Quebec boundary, with the projected railway that will tap its riches. Some 150 manned weather stations now dot the American Arctic.

Soviet Developments Noted

In contrast to America's Northwest Passage, which has been completely navigated only three times, Soviet Russia's Northeast Passage from Archangel to Bering Strait is a busy shipping route in summer. The Top of the World map shows how the Pechora, Ob, Yenisei, Lena, Indigirka, and Kolyma, all among the world's big rivers, flow north to the coast-following passage and provide ship routes between Russia's vast interior and the Arctic Ocean.

It shows that at or near the mouths of these rivers important towns have sprung into being—towns strange to most Americans—Naryan Mar, Norilsk, Tiksi, and Sredne Kolymsk. Such other towns as Verkhoyansk,

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Hard by Fort McKinley is Nichols Field, the former Air Forces base so heavily bombed by the Japanese in the days following Pearl Harbor. This passed from American control to the Republic of the Philippines in 1947 and now is an international commercial airport.

Another historic post that has been placed under the flag of the new republic is Corregidor, the island bastion at the entrance to Manila's spacious bay. Jungle overgrowth now hides most of the deep scars which World War II left on "The Rock," where United States forces made their last stand in the Philippines in 1942.

The transfer of prewar and wartime installations to Philippine hands has not, however, denuded the Manila-central Luzon area of defensive bases under the Stars and Stripes. A 99-year pact concluded between the two countries in 1947 retains the United States right to naval bases at Cavite (illustration, below), in Manila Bay, and Subic Bay on the China Seaside of Bataan Peninsula. The principal Army post is Fort Stotsenberg, 50 miles northwest of Manila, with the Air Force at near-by Clark Field.

NOTE: Quezon City and United States military stations may be located on the Society's map of The Philippines.

For further information, see "Seeking Mindanao's Strange Creatures," in the *National Geographic Magazine*, September, 1948; "Mindanao, on the Road to Tokyo," November, 1944*; "Facts about the Philippines," February, 1942; and "Return to Manila," October, 1940; and, in the GEOGRAPHIC SCHOOL BULLETINS, October 8, 1946, "Philippines Join Ranks of Free Nations."

J. BAYLOR ROBERTS

* UNITED STATES NAVY MEN STILL ARE AT HOME IN FORT SAN FELIPE, CAVITE, PHILIPPINES

Bells Proclaim Man's Supreme Moments

THE ringing of bells stirs the heart and mind of man. Let bells sound across the rooftops or along rural byways and man immediately wonders why. Has a prince been born, a president inaugurated? Has a great peace treaty been signed? Has a miracle occurred?

Or man may simply look at his calendar and know why the bells peal. It is Sunday. It is Independence Day, Christmas, Easter, a holiday. Or it is a week-day nine o'clock and 32 million young Americans are answering the school bell.

Liberty Bell Is Ultimate

Although electric gongs and buzzers increase in this age of the volt and the ampere, the hand-swung bell with its graceful curves, trumpet mouth, and dingdong clapper still holds sway in thousands of school belfries and classrooms.

Shape and metal composition may not be all-important in the bell swung by the schoolmarm. But when it comes to the large cast bells for school and church belfries (illustration, inside cover), mathematical laws take a hand. The familiar Liberty Bell silhouette is the ultimate in the search for rich, clear tone. So is "bell metal," alloyed of approximately four parts copper and one part tin.

Bells, mentioned in historic records of 4,500 years or more ago, have heralded virtually every event of historic importance (see Bulletin No. 2) and have touched almost every human emotion. Bells of antiquity had varying shapes in various lands. Even down to modern times, Chinese bells are frequently square or cylindrical, Japanese bells are barrel-shaped, Italian bells are long-waisted.

At Campania, Italy, A.D. 400, the Bishop of Nola is said to have placed the first bell in the tower of a church. In the centuries to follow, clocks were not common possessions, and bells regulated everyday life. Even now, in small European towns the bells—each one known by voice and by name—tell off the day's routine.

The Liberty Bell was the first of large size to be cast in America. Imported from England for the State House in Philadelphia, it cracked at its testing and had to be recast. In 1776, on the eighth of July—not the fourth—it carried out the duty inscribed on it—a line from *Leviticus*: "Proclaim Liberty throughout all the Land unto all the Inhabitants thereof."

World's Largest Bell in Moscow

This, America's most famous bell, weighs six and one-half tons, little more than one-fourth the swinging weight of the largest of 72 bells in the carillon tower of New York's Riverside Church. The latter, a giant among tuned bells, is dwarfed by several centuries-old bells of Russia and the Orient.

The world's largest bell, weighing about 200 tons, is the "Tsar Kolokol" at Moscow. Cast in 1733, it is 20 feet high and 21½ feet in diameter at

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Magadan, Elgen Ugol, Seimchan, Aldan, and Vilyuisk depend on the rivers or overland routes leading from them.

Great-circle distances in statute miles between 18 important points in North America and 20 in Eurasia are shown in a table imprinted on the map. Washington, D. C., and Seattle are revealed as lying the same distance, about 4,200 miles, from Murmansk, Russia's only ice-free port except those on the Black Sea. The shortest route from Winnipeg to Igarka on the Yenisei, or from Fairbanks to Murmansk and Leningrad, lies almost exactly over the North Pole.

The new Russian industrial concentrations in the Far East along the Amur, in the Lake Baikal and Kuznetsk regions, in the Urals, and in the Arctic littoral are mapped. The map graphically portrays for the layman most of the geographical reasons for the newly heightened interest in the "Top of the World."

Land and water features peculiar to polar regions are shown. A repeated tree symbol indicates the northern limit of wooded country. A mottled white shows the extent of permanent polar ice. Zigzagging from near Murmansk to Nova Scotia, and from Alaska Peninsula to Vladivostok, a white line reveals the southern limits of drifting ice. Greenland's icecap and the northland's glaciers are shown by a blue symbol.

NOTE: See also, "Milestones in My Arctic Journeys," in the *National Geographic Magazine*, October, 1949; "Lapland's Reindeer Roundup" (14 color photographs), July, 1949; "Servicing Arctic Bases," May, 1946*; "Greenland from 1898 to Now," July, 1940; and "Nomads of Arctic Lapland," November, 1939*.

ROYAL CANADIAN AIR FORCE

THERE ARE NO TREES, BUT NEITHER IS THERE ANY ICE IN THIS VIEW OF THE ARCTIC SEACOAST

The village of Coppermine, District of Mackenzie, Canada, looks across bleak Coronation Gulf. Ice closes in most of the year but the residents enjoy a brief summer. The nearest trees grow about 75 miles inland, along the Coppermine River. Another 75 miles south, across the Arctic Circle and on Great Bear Lake, lies Port Radium, one of the world's greatest sources of radioactive minerals. Coppermine was named for large deposits of copper in the vicinity.

Bulletin No. 5, October 17, 1949

America Leads World in Fall-Color Display

WITH October's bright blue weather comes fall's rainbow foliage. From New England to the Ozarks and the Rockies, the forests are putting on their Joseph's coat of autumn—a gorgeous array of scarlets, purples, golds, and browns.

Faraway places may have glorious vistas, glamorous natives, and strange-sounding names. Nowhere else on the continents and islands of the globe, however, is there the autumn riot of leaf color that one sees in the woods and on the templed hills of the United States and Canada.

Climate Makes the Difference

The verdict comes straight from the National Geographic Society's much-traveled staff writers and photographers. With a bow to the show put on by the maples and bamboos of the Orient, by the beeches and oaks of northern Europe, and by occasional other species here and there, they reach a single conclusion. The world's best in autumn foliage is the scene that greets Mr. and Mrs. America rambling the countryside stretching away from their own doorstep.

Why is it best? Combined climate factors hold the answer. The temperature must be cool enough to encourage tree roots to take it easy. Sunlight plays a big part. Dryness without actual drought gives the leaves their best chance to flame. Early heavy frosts, like too much rain, can greatly curtail the tapestry of color between summer's greens and winter's browns.

Through spring and summer, trees and plants are busy factories. Their roots take water and minerals from the earth and send them in a steady flow of sap to the leaves. There, bright green chlorophyll is made and functions as lifeblood in combining the sap from the roots with carbon dioxide from the air to make the foods that cause growth.

When a tree, taking nature's signals, slows down for a dormant period, its roots curtail the flow of sap. Its leaves slowly lose their firm connection with the branches. Their dominant green chlorophyll decomposes, and other natural agents of growth, present in the leaves all the time, get their chance to show. These are the creators of the yellows, reds, and purples. The autumn glory is on.

Oaks Hold out Longest

Combinations of these agents account for variegated hues in a single tree. The color patterns change daily as autumn progresses. Reds and purples turn to bronzes as bright pigments blend with the brown of death. Finally, the leaves fall, by their own weight alone, or oftener plucked away by a breeze.

Frost's part in the color parade is not as big as is often supposed. The leaf-turning process starts well in advance of frost but is hastened by its cold nip. Some oaks, however, keep busily growing until frost arrives, and their leaves are not ready to fall. Fibers connecting leaf and branch, suddenly killed by the frost, become tough. The leaves are held

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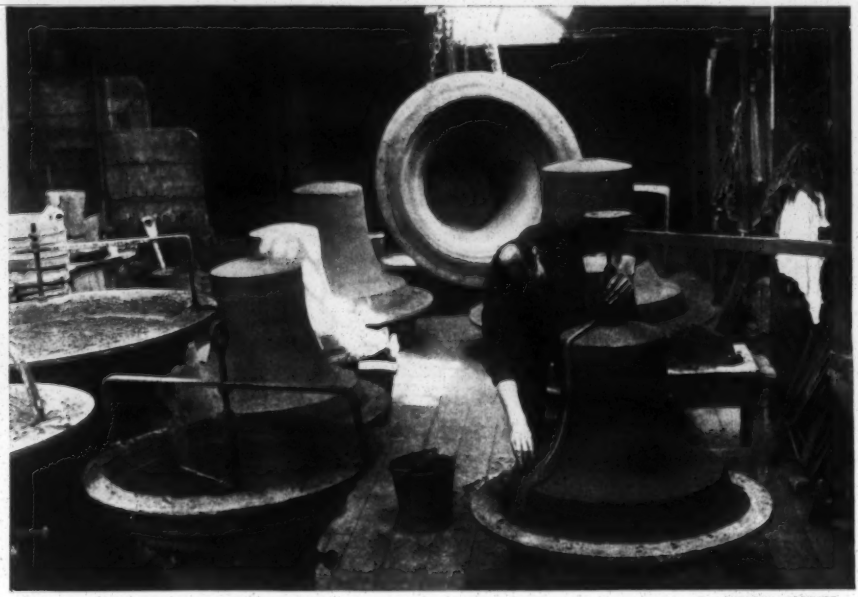
its base, and stands on a granite pedestal inside the Kremlin walls. An eleven-ton chunk broke from its mouth a few years after it was cast, leaving an entrance to the bell's interior which in tsarist days served at times as a chapel.

Peiping, China, and Kyoto, Japan, had, and may still have, 60-ton giants, and a pagoda in Upper Burma supported a bell of more than 80 tons. But to western Europe's founders (illustration, below) of the past three centuries goes much of the credit for developing sweet bell tone. They resolved the true bell shape and determined that tin with copper is the source of "silvery" sound. They developed carillons of bells in weights ranging from a few pounds to 20 tons.

Today the radio often brings to travelers the voice of beloved bells from home—the throaty clang of London's Big Ben, the melodious evening tinkle from Stockholm's City Hall, carillon music from Ottawa, Ithaca, Lake Wales. A 300-year-old bell inscription widely used reads: "I to the church the living call—and to the grave do summon all."



B. ANTHONY STEWART

IN A LONDON FOUNDRY, A CRAFTSMAN CURVES A BELL CORE INTO SHAPE

At London's Whitechapel Bell Foundry generations of artisans have shaped the curved sides of bells that toll for war and peace, fires and festivities. The workman is sweeping a curved board called a strickle around the loam-coated core. When it is the required shape he will place it in the iron outer mold (left)—also coated with earth—and the metal will be poured in. After the metal cools, the outer mold is removed and the core knocked out. The bell is then ready for finishing. London's most famous bell, Big Ben, was cast at Whitechapel in 1858, long before the advent of radio whose waves have broadcast its historic tones to the world.

TEACHERS! Do you leaf aimlessly through your *National Geographic Magazines*, looking for that article on Greece, those color pictures of Guatemalan costumes? Save time. Order the new Cumulative Index, 1899-1947 inclusive. Price $2.50 anywhere. 1947-48 Supplement, 25¢ in U.S. and Poss.; elsewhere 50¢.

to the branches until a new spring starts the growing cycle once more.

Maples, in contrast, are often completely stripped of full foliage in a few short hours of sunshine after a night of sharp October frost. Ice has formed in the night at each leaf-stem base, virtually completing the leaf's partition and at the same time holding it from falling. The morning sun thaws the ice, starting from the top of the tree down. The golden leaves shower to the ground as the heat descends.

Other lands of comparable climate have less of a color show because of the prevalence of evergreens, or because of trees whose leaves fall without changing, as do European ashes and alders. Conifer evergreens lose only part of their green attire each season, the needles of some species surviving for six or seven years.

J. BAYLOR ROBERTS

WHEN THE DECIDUOUS TREES DECIDE TO CHANGE COLOR, THE VISTA FROM NORTH CAROLINA'S GRANDFATHER MOUNTAIN IS ONE OF THE WORLD'S BEST

The pine in the foreground, and others scattered throughout the forest, remain ever green, adding another color to the fall tapestry of gold, red, yellow, russet, and brown. Deciduous trees, those which shed their leaves in the fall, are more prevalent in the United States than evergreens, whose needles stay on for years.

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